GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MARCH 9, 1892.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The Proposed Speed-road in Central Park 109
The Value of a Tree 110
Bright Winter Leaves . . . . . *L. Greenlee.* 110
Winter Rambles in the Pine-barrens.—III . . . . . *E. J. Hill.* 110
Pinus latifolia . . . . . *T. S. Brandegee.* 111
Seed-raising in Germany . . . . . *George F. Daniels.* 111

NEW OR LITTLE-KNOWN PLANTS:—Lespedeza bicolor and L. Sieboldi. (With figures.) . . . . . *J. G. Jack.* 112

FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Watson.* 113

CULTURAL DEPARTMENT:—The Winter Garden . . . . . *J. N. Gerard.* 116
Variegated Abutilon Eclipse . . . . . *Wm. Tricker.* 116
Cypripedium Leeanum and Varieties . . . . . *John Weathers.* 117
Insects in the Soil of Greenhouses . . . . . *John B. Smith.* 117
Sowing Celery-seed . . . . . *Professor W. F. Massey.* 117
Aster acris . . . . . *V. C.* 117

CORRESPONDENCE:—Constitutional Health of Plants . . . . . *A. W. Pearson.* 118
The Tan Bark Oak . . . . . *Carl Purdy.* 118
Help Against the Gypsy Moth . . . . . *Frank H. Nutter.* 119

EXHIBITIONS:—Orchids at Short Hills, New Jersey 119
Orchids at the Eden Musée 119

NOTES 120

ILLUSTRATIONS:—Lespedeza bicolor, Fig. 18 114
Lespedeza Sieboldi, Fig. 19 115

The Proposed Speed-road in Central Park.

WE sometimes feel like offering an apology to our readers for restating so frequently some of the fundamental principles which should control the design, the development and the management of our city parks if they are to attain their highest possible value. But we are too often reminded that there are many people of intelligence and refinement who seem to have no adequate appreciation of the elementary truths upon which all thought and action in park matters ought to rest. Just now certain wealthy gentlemen of this city have revived the project to run a broad, straight and perfectly level road through Central Park along its western boundary line, to be used exclusively for driving horses at speed; and either they do not understand that this will mean the utter ruin of the park as a place of rural recreation, or, if they do understand this, they consider the use to which they propose to devote it a more important one than that for which it was originally intended.

The primary purpose of the park was clearly discerned when the land was bought. The projectors of the park realized that the growing city was rapidly obliterating every trace of natural scenery from Manhattan Island, and they deemed it a wise and wholesome provision to save a central area where trees and grass and flowers—a picture of pastoral peace—should be preserved as a refreshing antithesis to the rigid lines of stony streets and buildings about it. The city gave bonds to hold it in trust for posterity, and for this single use. It was planned, graded and planted to this end alone. Every road and path and archway was constructed solely to afford the best opportunity for enjoying the beauty, melody and fragrance of a natural landscape. All intelligent men who have given profound thought to this subject are unanimous in their judgment that this was a worthy purpose; that the city did wisely in expending millions of dollars to secure a park designed with such a motive; that, indeed, no city of any pretension, and New York least of all, hemmed in as it is by waters, which forbid its expansion except to the northward, can afford to be without such a park. And yet these eminent citizens are asking the Legislature to authorize the desolation of a portion of this work, and to insure the final destruction of all of it after millions of dollars and the thought and labor of years have been expended in developing its capabilities. It is even said that one of the Park Commissioners has lent his influence to the movement, although his position is that of a trustee appointed to protect from all such assaults the public property which he seems willing to surrender to its enemies. A Park Commissioner, even if he were empowered to do so by special law, has no more moral right to give over a portion of the park to a use which is not only foreign to its purpose, but utterly destructive of that purpose, than he would have to sell it for building lots.

The promoters of the speed-track urge that paths have been made in the park for visitors to walk in, a bridle-pad for those who ride, carriage-roads for those who drive, and why not, therefore, a special place for those who wish to speed trotters? The obvious answer to this is, that the roads and paths were made not primarily as places for walking or for driving, but in order to enable persons on foot, on horseback or in carriages to enjoy the park itself. That is, the roads and paths exist solely in the interest of the park. The aim of the project in question is just the reverse of this. It is not the construction of another road to open new views or give additional facilities for visiting any portion of the park. It means the destruction of the park in the interest of a road to be used for its own sake by the few people who wish to drive at speed. The principle is utterly vicious. Even if it is the duty of the city to provide a track for the owners of fast horses it does not follow that the park should be sacrificed for it. If the city needs a track for running horses—and if a track for fast driving is provided why not for hard riding and hurdle-jumping—or a military parade-ground, or a field for base-ball, football and other athletic sports, the obvious course is to buy the ground and prepare it for these purposes. It would be the work of barbarians to confiscate Central Park for any one or all of these uses, or for any other foreign use, after it has become famous as the most beautiful, and, therefore, the most useful urban park in the world, and the object of our noblest civic pride.

We have become so accustomed to apply the name of park to a ball-field, a race-track, a game-preserve, an arboretum, a forest, a country fair-ground, or any other place that is not roofed over, that the popular notion of the meaning of the word has grown confused, if it ever was distinct. Even intelligent people have to be reminded that many worthy purposes to which open-air resorts can be put would be utterly destructive of the value of a park for rural recreation—that is, the value of a park as a park. It is true that opportunity is offered in Central Park for skating, for lawn-tennis and for some other sports, but these have always been subordinate features—mere incidents which have not been in conflict with the controlling purpose of the work. How far such incidents can be safely multiplied is a matter of judgment; they certainly have never yet been obtrusive or disturbing. Such games are not in themselves inconsistent with the refreshing influence of quiet scenery. No portion of the park has been turned into a desert to make room for them; no grass has been replaced by gravel, nor has any wide swath a mile long been mowed through the trees for them. Every year since the park was designed some class or interest or movement has made an effort to condemn a portion of it to special use; but in the main these assaults have been repelled, and when the power and persistence of this pressure is considered, the salvation of the park—that is, its preservation for its original purpose in ever-growing beauty and value—is something of a marvel.

We have discussed this matter in a general way, presenting only elementary principles which ought to protect a park from invasion of any disturbing character. Perhaps it should be said that this speed-road project is the most

dangerous attack with which the park has been threatened. The most important plantation in it is the tree-border, which, so far as possible, shuts the city out of sight. This project would practically sacrifice the entire border of one side of the park, or it would narrow into pettiness the meadows whose breadth gives the park its essential charm. It would warn out as with a line of fire all visitors from the west side, unless they reached the park through tunnels under the road or by bridges thrown across it. It would make an offensive exhibition of the power of money to confiscate for the pleasure of a few rich men the ground which offers to the poor of the city their only opportunity to enjoy the sight of verdant fields. No one would think of selecting such a site for a speed-road unless he could steal the land. And when the enormous cost of construction through these rugged rocks and ridges is added to the greater loss by destruction which the people of the city would suffer, this would prove the most expensive road in the world. And, after all, it would make only a second-class track, which would be abandoned as a public nuisance within five years after it had been finished.

What is the value of a tree? is a question which has lately been settled in the London courts, as reported in a recent issue of the *Gardeners' Chronicle*. It appears that a resident in the suburbs of London had in his garden two Poplar-trees, which protected him from the smoke and noise of trains passing over the rails of the London and North-western Railway Company, whose location his land joined. The trees, for some reason or other, interfered with the traffic of the railroad; the owner was willing to shorten the branches, but objected to cutting down the trees. And then, negotiations for their removal having failed, the company sent its own men and cut them down. They offered to pay two hundred and fifty dollars for this high-handed act, and later increased the amount to five hundred dollars. The court placed the value of the trees at fifteen hundred dollars, and awarded additional damages of one thousand dollars for the injury caused by their removal. An occasional decision of this character in this country would have a very salutary influence upon telephone and telegraph companies, who have come to look upon our highway trees as of no value whatever when they interfere in any way, directly or indirectly, with their business.

Bright Winter Leaves.

Even in our colder northern states nature has some bright color for winter's relief. Against the background of her sombre browns, purplish grays and evergreens gleam out, now and then, scarlet winter fruits and berries, and the shining crimson stems of vigorous young tree-shoots. Traveling southward one finds, interspersed among the open woods, clumps of Holly (Ilex opaca) all aglow with clusters of bright berries thickly set among its thorny shield-like leaves, and in the tops of Oak and Gum trees are brilliant green circles of Mistletoe, gemmed with pearl-like berries.

These glints of color, on a level range of vision, the eye quickly takes in, but close down to the forest-leaves at one's feet, the persistent foliage of a number of forest-plants form patches of glowing color quite as cheering to look upon.

Tiarella cordifolia, our dainty little Foam Flower, retains its large, Maple-shaped leaves all winter here in the middle Alleghanies. These leaves all spring in a great tuft from the root, and, ripening into glowing patches of yellow and scarlet, gleam out brightly from rocky eastern hill-sides. I have seen these leaves, still soft and pliant and vivid in color, late in spring, with the delicate sprays of the plant's white flowers above them, before the young season's leaves were sent upward.

Often in the open woods in winter you come upon great beds of Galax aphyllya leaves. They are of all colors, from the soft green of their summer hue, shading up through tints of golden green and scarlet and crimson to darkest brown-maroon. These quaintly shaped round-cordate leaves, with their crenate-ruffled edges, are borne upon slender wiry stems six or seven inches high. Their texture is stiff and glossy, and they shine as if varnished, and rustle softly as the wind sweeps over them. In the sunlight they gleam like a beautiful mosaic.

The leaves of Asarum Virginicum are as handsome as those of any Cyclamen, and, when bruised, exhale a strange, delightful odor. On exposed, bare hill-sides the cold gives to the thick, leathery leaf a metallic purple lustre, but usually it is bright green mottled with white, like the Cyclamen-leaf, which it also resembles in shape and size. A curious little family of pitcher-shaped blossoms may be found clustering close to the earth beneath these leaves in March and February.

A darker leaf, but one quite as beautiful and persistent throughout the winter, is that of the Dye Bush. Its common name was given with reference to the yellow dye extracted from it I am told. But its winter-leaves are a soft, rich purple color, as smooth and pliable as velvet. I have seen the mountaineers bind them upon wounds for healing as they would a salve. The shrub grows only three or four feet tall, and its mantle of purple leaves covers it thickly.

Western North Carolina. *L. Greenlee.*

Winter Rambles in the Pine-barrens.—III.

Allied to the Alder and Paper Birch, and the only representative of the Sweet-gale family here, is a petty shrub, Myrica asplenifolia, or Sweet Fern, found sometimes in the sterile soil. It corresponds in size to the Low Birch (Betula pumila), likewise found in neighboring bogs. It is also much like it in color, the bark of the stems being brown, and that of the branches reddish brown. It is a stout little shrub, two or three feet high, with long branches ascending or horizontal, making it tree-like in shape. Its chief attraction now is the prominent, club-shaped tufts of male catkins at the ends of the long branches. They are in clusters of five or six, closely appressed to the branches, often slightly twisted so as to form an imperfect spiral around the branch, and point away from the plant like an outstretched finger. The pointed scales are softly hairy, and, like the ends of the branches, are sprinkled with resinous dots, which shine like flakes of pyrite under a lens, the whole arrangement offering a singular blending of color coming from the brown scales, gray hairs and golden dots. The aments and young branches exhale the same resinous odor that the leaves do in summer, though not as strong, from which agreeable property, and the fern-like appearance of its pinnatifid leaves, it obtains its popular name, Sweet Fern. It is regarded as one of the most characteristic species of the Pine-barren flora, but I do not find it as abundant among the Pines here as it is farther north. In fact, it is more common in the sandy region bordering the Pine-belt than in the Pine-belt proper.

There is an interesting moss-like plant on the sand-hills belonging to the Club Moss family, the little Selaginella (S. rupestris). It grows in close tufts, rooting in the sand as effectually as it does to the rocks, which are its more common home, and have given it its name. The short, roundish stems, densely clothed with small grayish green leaves, are rigid, and often nearly buried in sand, for the plant delights in exposed positions, not on shifting dunes, but on hills partly overgrown with trees, when it helps to keep the sands in place. It is very different in color and appearance from the flat-stemmed Selaginellas, common in cultivation for the decoration of flower-baskets and the edges of flower-pots, one of which, S. apus, is found sparingly in the wet sands of this locality.

Two of the true Club Mosses, with evergreen foliage, grow in the Barrens, but are not common. One is the Ground Pine (Lycopodium obscurum, var. dendroideum), seen in rather moist, shaded ground, with upright shoots half a foot high and closely resembling a miniature tree rising from a creeping subterranean stem. They are always bright and glossy, with thick, lance-linear, incurved leaves closely attached in several ranks to the stems and spreading branches. The erect, club-shaped spikes of fruit, dry and faded, may be seen adhering to the summit of the stems. The other is L. clavatum, also known as Ground Pine, but with less of the appearance of a tree, smaller and less striking. The branches are flat and forking and spread like a fan, and are provided with minute awl-shaped leaves. The stems creep extensively, sometimes just beneath the surface of the ground, but more often under a covering of leaves or humus. From these several upright stems, three or four inches high, spring up. The fan-shaped branches may start from these stems in such a way as to assume a spiral or corkscrew appearance as they spread. It is a paler plant than the preceding, lacking its glossiness, but excels it in prettiness when in fruit, with two to four cylindrical spikes borne in an upright cluster at the top of a slender

peduncle. While one resembles the Juniper, but with leaves spreading and incurved, the other has the spray of the Arbor-vitæ.

Another plant of the dry sand-hills will lead one to stop and inspect it when met with in the winter. It is the smallest shrub of the flora of the lake, Hudsonia tomentosa. The stem rises but little above the surface of the ground, the whole plant being scarcely more than six or eight inches high, its stem usually bending to one side. It branches so excessively as to have a tuft-like crown. The bark is very dark, almost black, and the branches near their ends and all the twigs are covered with a gray tomentum. When seen in the winter, the plant seems dead and uninviting, the slender twigs so brash as to break square off as if dry, thus adding to the deception. But under a thick covering of hairy scales are the small green buds, and the wood of the fresh fracture shows a green color when closely examined. These tiny shrubs make their home in exposed positions where little else grows, striking their roots firmly in the sand, and the apparently dead tufts, at which the wind tugs hard to draw them from the ground, will be lively in the spring, or early summer, with small but numerous yellow flowers.

Englewood, Chicago, Ill. *E. J. Hill.*

Pinus latifolia.

DURING last autumn Mr. S. D. Dill, of the Museum of Natural History of New York, has been collecting sections of western trees in order to complete the well-known Jesup collection of woods, which forms so interesting and instructive a part of the exhibit of that institution, and I had the pleasure of accompanying him on one of his last trips, which was to the Santa Rita Mountains of Arizona, for a log of the little-known Pinus latifolia.

This tree was discovered in the Santa Rita Mountains by Dr. Heinrich Mayr in the year 1887, and was described from his notes in this journal (vol. ii., p. 496). In searching for the locality we went first to the town of Crittenden by rail, and thence twenty-five miles to the end of a wagon-road that follows a cañon well into the Santa Rita Mountains. This road formerly extended a mile or more farther up the cañon, but the waters of some rainy seasons have washed out the upper part, rendering it impassable for wagons; nevertheless, we were able to drive to some of the trees we were looking for. At this elevation they are to be found only in shaded cañons; higher up the mountain they are sparsely scattered over all the slopes from near, but not on, their summits, downward a thousand feet or more.

In general appearance this tree closely resembles P. ponderosa. It has a similar fissured, reddish bark like that, of variable tone, sometimes lighter, sometimes quite dark; the branches described as tortuous are as often not so, and the cones vary in size and shape. The leaves, variable in length, are generally in threes, although sheaths containing two or four can be found. When they are two, the faces are flat; when three or four, they are at first triangular, becoming gradually flattened, with a distinct midrib. The sheaths of the young leaves are more than an inch long, and decrease in length as they increase in age. The trees had borne no cones for two or three years, but under some of them an abundance of old ones were found. They are always more or less oblique at base, and, with age, seem to fall to pieces from that end, showing at first a stipe-like axis. An extreme form of cone, observed only under a single tree, was very different in appearance from the others. They were slightly unsymmetrical, and the basal scales being detached, the remainder were strongly reflexed, giving to the cones a curiously strong resemblance to the head of an artichoke (Cynara Scolymus). Our visit being late in the year (November), after an extremely dry season, when all the leaves of the deciduous bushes and trees had fallen, a great portion of the accompanying vegetation was not specifically recognizable.

Some few plants of Tagetes and Zauschneria were yet in bloom, and their presence, where at the same time the year before there had been snow, was due to the unusually warm November, so warm that a rattlesnake and a tarantula were seen out in the sunshine. This part of the Santa Rita range was very dry, and water for drinking was found at only one place, and there in small quantity. The mountain is covered with bushes, and in some places there are many trees, especially near the summits and about the shaded slopes. The Oak, represented by five species, is very common, and scattered around are Garrya, Arctostaphylos, Fraxinus and Ceanothus, growing among Junipers, Madroñas, Douglas Spruces and several species of Pine.

San Francisco, Cal. *T. S. Brandegee.*

Seed-raising in Germany.

MR. GEORGE F. DANIELS, who has spent some years in one of the chief seed-growing centres of Germany, delivered an address last month before the East Anglian Horticultural Club at Norwich. The *Journal of Horticulture* contains a full report of the paper, and from it we make the following extracts:

It is only within the past twenty to thirty years that this trade has assumed its present gigantic proportions. The increased demand for flowers in England has given a corresponding impetus to seed-growing abroad, where they have the advantage of cheap labor and a climate especially adapted to this work. England, next to America, is the largest importer of German-grown flower-seeds. Besides this, large quantities find their way to all parts of the world. The secret of this successful cultivation lies in the bright dry autumn, which enables seeds to stand longer and become thoroughly ripened. Not only is the climate well adapted for the production and ripening of seeds, but the soil, which in Erfurt is a deep, rich and moderately stiff loam, is all that can be desired for the purpose.

Stocks form one of the leading features in a seed-growing establishment, and are one of the most expensive crops to grow, so far as labor is concerned. They are nearly all grown in pots, only the inferior sorts being left to take their chance in the open ground. One firm grows 300,000 pots of these annually. The plants are kept on stages, like an ordinary greenhouse-stage, and the houses have a wooden or tiled roof to keep off the heavy rain and the too direct rays of the sun, the sides and back being left open. The soil used must be well decomposed or "matured," and free from any vegetable matter. Therefore, three years' supply is always kept on hand, and turned, from time to time, to make it sweet. The plants, which are raised in pits on a slight hot-bed, are pricked into six-inch pots, when in the fourth leaf, seven to nine in a pot, so as to throw up single stems only. There are two reasons for this crowding. Seed is only obtained from the single flowers. As soon as the double ones make their appearance the plants are cut off, thus giving more room for those remaining. Placing several in each pot tends to starve the plants somewhat; and when thus treated they produce a larger percentage of double-flowering plants; this has been proved. Seed saved from plants grown in the open ground does not produce anything like the same percentage of double flowers; fifty per cent. is considered a good average, although in some places it ranges as high as sixty-five per cent.

Stocks require a copious supply of water throughout the growing period, which extends from April to October, except for a week or two when they first show their bloom, when it must be sparingly given, as overwatering at this time would cause them to damp off and encourage the attack of insect pests, which are very troublesome at this period. The labor required in constantly watering and tending such an immense number of pots is very great, and keeps up the price of these beautiful annuals.

Autumn Stocks and Wall-flowers require much the same treatment, but in their case a much longer period is required for growing and ripening the seed. The seed is sown in July, and the plants potted in the same way and kept through the winter, a very difficult thing where proper accommodation does not exist, and the thermometer is often several degrees below zero. The larger growers, who have the room, keep them in cool houses; but in small establishments where such is not obtainable, they are kept in pits well covered with litter, air being admitted on fine days. If the winter proves severe, the plants suffer accordingly, as the pits become snowed and frozen for weeks together, and want of air causes many to damp off.

China Asters form another important feature, perhaps even a greater one than Stocks, and are grown by acres, one firm alone devoting over one hundred acres to them. They are raised in pits and afterward planted out on the beds, where it is intended to grow them for seed. The distance they are planted apart varies according to the variety, but is seldom less than a foot each way. The planting is done by gangs of men, much in the same manner as we place our Cabbages, and each plant is carefully watered to settle the soil around it, the water being conveyed to the fields by carts specially constructed for this purpose. When they come into bloom, they must be constantly examined, and all stragglers and "button-eyed" ones removed. The best flowers are selected in March, and the seed of these is kept for stock seed for next year's growing.

Petunias are raised in pits, then potted and placed on stages in the open after the same manner as Stocks. They require

much attention, as each bloom has to be fertilized by hand to insure the setting of seed. The pollen from the double blooms is very difficult to obtain, the flowers being so dense that they have often to be removed from the plant, then placed in wet sand and pulled open so as to allow the sun and the air to ripen the pollen, which is carefully removed and placed on the finest single blooms. The seed saved from these is called double, but it is rarely possible to obtain more than twenty-five to thirty per cent.

Calceolarias are sown in July and August, and after two or three shifts they are finally placed in six-inch pots about the end of January. In May they are arranged upon the stages outside where they are to bloom and seed. They are very shy seeders, and it is only by careful hybridization that a crop can be insured. Every bloom is examined, and the pollen taken from the stamens and placed on the pistil, and as the operation must be performed when the pollen is quite ripe they must be looked through nearly every day to catch each bloom as it comes to maturity.

Carnations are grown on stages, and are usually propagated by layers. A collar or hoop of wood about one and a half or two inches deep is placed round the top of the pot and filled with soil; into this the young shoots are layered, and when sufficiently rooted they are taken off and potted, the hoop and extra soil are then removed, and the mother-plant kept to ripen what seed there may be on it. Seed is very difficult to obtain under any circumstances, and then only in small quantities. The supply is always limited, and there is not much chance of its ever being much cheaper than it now is. In one establishment I visited ten to fifteen thousand pots were kept going for these alone.

The commoner kinds of annuals are grown in quantities. Mignonette and Dianthus are grown by the ton, and a single firm often harvests several hundredweight of Pansy-seed. Pansies require the closest attention, and must be caught at the right time; if not, the pod bursts and the seed is scattered. Some seedsmen grow Everlastings, and reap many acres of them under cultivation. This forms quite a business by itself. They are dried in warehouses specially built for the purpose, and afterward bunched and packed for export.

The pits in which most of the plants are raised are constructed of wood, and are generally not more than nine to eighteen inches high, with the soil cleared out to a depth of about three feet. They are then filled up in the following manner: A layer of rough stalks, then a good layer of fresh manure to within about nine inches of the top, and well trodden down. This is allowed to settle for a day or two, and upon this is placed a layer of fine soil, in which the seedlings are raised.

During summer they are used for growing some of the more tender annuals, such as Cockscombs, Portulacas, etc., so that protection may be given if necessary during cold nights. The soil and manure is removed in the autumn and carefully put away. In this manner it is being utilized while preparing it for future potting operations. They are used in winter for storing Wall-flowers and autumn-sown Stocks, as before mentioned.

The plan of improving stocks of seed is as follows: As soon as the plants are fully in bloom they are carefully examined, and the best and truest as regards color or shapes are singled out by placing a stake next them. When the seed is ripe they are carefully gathered by themselves and kept for stock the following year. This is very necessary in the case of some annuals, which show a great tendency to revert to the wild state, and, at the same time, it improves the stocks from year to year, so that everything is brought as near perfection as possible.

New or Little-known Plants.

Lespedeza bicolor and Lespedeza Sieboldi.

ONE of the most interesting and valuable plants of comparatively recent introduction is that known in many of our gardens as Desmodium penduliflorum, but which, in some places and by a number of writers, has been called Lespedeza bicolor, a name apparently belonging to an entirely different plant.

It is unfortunate that neither of these names is correct. It appears that the plant in question, originally described by Miquel in the third volume (p. 47) of the *Annals of the Museum* at Leyden, should be called L. Sieboldi, a name generally regarded as a synonym or representing a variety of L. bicolor.

L. bicolor[1] is a distinctly shrubby species first described in 1840 by the Russian botanist Turczaninow, and first introduced into cultivation by Maximowicz, who, in 1856, sent seed to St. Petersburg from Manchuria, where the plant is indigenous, as it is also in northern China and Japan.

Desmodium penduliflorum was a name given by Professor Oudemans, of Amsterdam, in 1866, to a plant supposed to have come from Japan, and proved by later importation to have been derived from that country.

It was soon widely distributed, on account of its ornamental value; but it was not for some years, or until the name given by Oudemans had become familiar, that this was announced as but another name for L. bicolor. The change of name was not generally adopted by nurserymen. Dr. H. Zabel (*Gartenflora*, 1889, p. 239) first called attention to the fact that the plant should be called L. Sieboldi, as being distinct from L. bicolor. A series of specimens, mostly of L. bicolor, from various localities in their native habitats, show that the species are very variable, especially in foliage. While it may be possible, as intimated by Maximowicz, that there are intermediate geographical forms or varieties which connect the two species, they are so distinct when growing side by side that to deny them specific rank must inevitably cause much confusion. In cultivation, L. Sieboldi does not prove any more shrubby in southern latitudes than in northern gardens, but it blooms earlier.

Among the published figures and descriptions of these two plants there is naturally some disagreement of identity. The first and best figure of L. bicolor is that given by Ruprecht (*Decas Plantarum Amurensium*, 1859, t. 5). The figure in *Gartenflora* (vol. ix., 1860, t. 299), though poor, is probably L. bicolor; that in *Flore des Serres* (vol. xxiii., 1869–70, t. 1888–89), as Desmodium penduliflorum, is a good representation of L. Sieboldi; and so is the excellent figure by Riocreux, opposite p. 211 of the *Revue Horticole* for 1873. What is figured as L. bicolor in the *Botanical Magazine*, 1882, t. 6602, unmistakably represents L. Sieboldi, although the description appears to have been drawn from L. bicolor; and so does figure 133 of vol. xx. (1883) of the *Gardeners' Chronicle*, in which it was published as Desmodium penduliflorum, but corrected in the index as L. bicolor.

Lespedeza Sieboldi[2] of Miquel is a strong herbaceous, but shrub-like, plant, having numerous stout pithy stems, from three or four to six feet high, which annually die to the ground or crown of the plant, and are replaced by new shoots each season. The stems are more or less ribbed or angled, and covered with a minute grayish pubescence, which is hardly noticeable on the lower portions, but gives them a silvery white appearance near the top.

The leaves are trifoliolate, the terminal leaflet usually being the larger, the leaflets on the lower part of the stem being from one and a half to two inches long, while those on the upper portion and on the branchlets are often reduced to half an inch or less in length. They are smooth above, and are quite densely covered with a minute appressed grayish pubescence beneath, which gives them a silvery aspect. They are usually elliptical-oblong in shape, shortly tapering toward both ends, hardly half as broad as long, and with or without a slender point or mucro at the tip. The petioles are slender, varying from two or three inches with the larger leaves to half an inch or less in length with the smaller. They are more or less covered

---

[1] Lespedeza bicolor, Turczaninow, *Bull. Soc. Nat. Mosc.*, xiv. (1840), 69.—Ruprecht, *Decas Plantarum Amurensium*, 1859, t. 5.—*Gartenflora*, ix. (1860), 270, t. 299.—Maximowicz, *Act. Hort. Petrop.*, ii. (1873), 355.

[2] Lespedeza Sieboldi, Miquel, *Ann. Mus. Bot. Lugd. Bat.*, iii. (1866–67), 47.—Zabel, in *Gartenflora*, 1889, 239.

Desmodium racemosum, Siebold and Zuccarini, *Fl. Jap. Fam. Nat.*, i., 121. (not De Candolle, Prodr. ii., 337, teste Maximowicz, *l. c.*)

Desmodium penduliflorum, Oudemans, *Neerland Plantentuin*, ii. (1866).—*Flore des Serres*, xviii. (1869–70), 107, t. 1888–89.—Carrière, *Rev. Hort.*, 1873, 211, and fig.—*Gardeners' Chronicle*, xx. (1883), 749, fig. 133.

Lespedeza bicolor, var. Sieboldi, Maximowicz in *Act. Hort. Petrop.*, ii. (1873), 355–357.

L. bicolor, Hooker, *Botanical Magazine*, xxxviii. (1882), t. 6602.—*Am. Ag.* xxxix., 21, f.

D. Japonicum, Hort.? (not Miquel).

with an extremely minute silky pubescence, and are provided with two slender, long, pointed, awl-shaped stipules at the base. The short petiolules are stouter than the petioles, usually light-colored and densely pubescent.

The large showy cluster of rosy purple flowers which terminates each stem is composed of numerous axillary racemes from two or three to six inches long. The flowers are much larger than those of L. bicolor, and average nearly half an inch in length, the wings, standard and keel being of the same general shape, but nearly twice as large. The five-parted calyx is covered with a grayish silky pubescence, and is about one-fourth of an inch long, the narrow slender-pointed lobes being quite twice the length of the shallow tube, at the base of which there are two minute bracteoles. The immature pod is one-seeded, quite densely pubescent, flattish, more or less ovate, from three-eighths to one-half of an inch long, and tipped with a slender tail-like appendage as long or longer than the pod.

Lespedeza bicolor is a single or few-stemmed, well-formed, woody shrub, attaining a height of seven or eight feet or more by rather slow annual growth. The bark of the stem is of a dark brown color, and is covered by numerous raised dots; the young branchlets are distinctly ribbed or angled, are light green or grayish in color, and are very sparsely covered with minute hairs. The outer portion of wood, or the sap-wood, is of a light yellowish color; the interior is brown or purplish brown, and the pith is very small. The wood is brittle, very close-grained and hard. The leaves are trifoliolate, and the leaflets vary in size from an inch and a half or a little more in length on the larger branches to less than half an inch on the flowering branchlets. They are about two-thirds as broad as long, and usually obovate, obcordate, oval or rounded in shape, often tapering somewhat toward the base, but rounding abruptly at the apex, or commonly truncate, retuse or emarginate, and seemingly always terminated by a slender tip or mucro.

The petioles are slender, smooth, varying from two or three inches in length to half an inch or less near the ends of the branches, and provided at the base with two short, comparatively stiff, awl-shaped stipules. The petiolules are thick, short, pubescent, and usually dark-colored.

The large compound racemes of flowers are much less dense and less handsome than those of L. Sieboldi; the individual blossoms are appreciably smaller and not generally of such a deep rich color. The calyces are smooth or covered with a short tomentum, and the bracteoles at the base appear less developed than in L. Sieboldi. The calyx varies from a sixth to a quarter of an inch in length, the rather obtusely pointed lobes not exceeding the length of the tube. The mature, single-seeded, flattened pod is somewhat pubescent, about one-fourth of an inch long, and a little more than half as broad. The slightly flattish rounded oblong seed is one-eighth of an inch in length and dark brown in color.

At the Arboretum, L. bicolor, at ten years from seed and after some annual pruning, is seven or eight feet in height and has single stems from four to six inches in circumference. These divide into several large branches at two or three feet from the ground. In good soil these plants make an annual growth of from a foot and a half to two feet, but the greater half of this growth produces flowers and does not live a second year. They now appear to have about reached their full size and development. As regards their shrubby character, they compare well with any Colutea in cultivation here, and, unlike Colutea, they do not throw up an indefinite number of stems or suckers.

In this climate the earliest flowers of L. bicolor open about the first week of July, and they continue to expand for about a month. The fruit is abundant and ripens early in September, and many of the pods soon fall to the ground, and if the earth is moist or they become slightly covered with soil, the seeds germinate almost immediately without leaving the pods. All the foliage is ripe and falls early in September. This species appears to be rare in cultivation.

L. Sieboldi, on the other hand, is really herbaceous, although it has a shrubby appearance in its summer vigor and growth. The stems annually die to the ground, and, like an Asparagus-plant, they become more numerous each year with the age and size of the root. The first flowers do not appear here until the seed of L. bicolor is ripe, and many of the dry leaves remain on the stems until winter. Seed does not ripen here, but plants are easily multiplied by division.

To add to the confusion already mentioned, L. Sieboldi has also sometimes been called Desmodium Japonicum and D. racemosum.

Arnold Arboretum. *J. G. Jack.*

Foreign Correspondence.

London Letter.

Cypripedium Chamberlainii.—This is a new introduction from the east, probably New Guinea, which Messrs. Sander & Co. have recently flowered, and which has been named in compliment to the Right Honorable Joseph Chamberlain. A figure, representing a portion of the inflorescence, natural size, and a reduced picture of the whole plant, is published in the last *Gardeners' Chronicle*, along with a brief description of the plant by Mr. J. O'Brien. Messrs. Sander & Co. advertise the sale of all the plants by auction on March 4th next. I have not seen any of the living material, but the following particulars are from Mr. Sander's manager:

The plant is a robust grower with exceptionally broad leaves, in some cases fully four inches in width, undulated and tessellated, "reminding one of C. Morganæ, but larger and finer." The flower-scapes are erect, two feet high, zigzag, and bearing numerous large boat-shaped bracts from base to apex. From each bract a flower springs, possessing scapes, some of which are said to have produced over thirty flowers. These, in color, are said to resemble C. superbiens or C. Morganæ, but in form they are quite distinct from anything else in the genus. The dorsal sepal is about two inches long and wide, yellowish white with rosy purple lines and spots. The lower sepal is similar, but smaller. The petals are each two inches or more in length, twisted spirally, tomentose and colored yellowish, with a profusion of spots and lines of a purplish color. The lip is as large, and resembles in form the common C. spectabile of North America; it is white spotted and shaded with rosy purple on the lower part. There are 700 plants of it advertised for sale. Besides this, at the same sale, will be offered plants of two other new Cypripediums—namely, C. Kimballianum, described as "a stately species"; the leaves are two feet long. The other has not yet been named, but it is described as having flowers like C. Wallisi, with a rose-colored labellum.

Cattleya Lawrenciana, the beautiful tropical species introduced from Roraima, in British Guiana, a few years ago, was sold in quantity at an auction sale to-day. This region has recently been visited by a collector from Messrs. Charlesworth, Shuttleworth & Co., who, besides the Cattleya and several other rare Orchids, also succeeded in bringing home alive several species of Utricularia.

Utricularia Humboldtii was among them. It has large peltate leaves and tall scapes, bearing several large blue flowers. Unfortunately, no one who has hitherto attempted the cultivation of this plant in England has succeeded in getting it to flower. It grows naturally in the heart of a large Bromeliad (Brocchinia cordylinoides), which always contains a quantity of water in its vase-like centre. But the same kind of treatment fails here; the healthiest plants yet obtained being grown in pans of sphagnum in a sunny tropical house. Thus treated they have made large fleshy tubers and leaves six inches across on stalks a foot high, but, so far, no flowers. Schomburgk, who visited the Roraima in 1845, saw and described this and many other beautiful plants peculiar to that mountain in his delightful book, *Botanical Reminiscences*. Of the Utricularia he says: "Here spread before us lay a small marshy

Fig. 18.—Lespedeza bicolor.—See page 112.

plain, on which Flora had assembled her most beautiful children, where the charm of flowers had culminated. The whole plain was covered with the dark blue U. Humboldtii, the most beautiful species of the genus, with red-tinted flower-stalks from three to four feet high, from which three or four of the curious flowers are suspended. While the amazed eye was looking upon this charming carpet of flowers it was especially attracted by the interesting and beautiful Heliamphora nutans, with light green red-ribbed leaves and bearing slender drooping spikes of white and sometimes red tinged flowers."

Messrs. Veitch & Sons imported plants and seeds of the

Fig. 19.—Lespedeza Sieboldi.—See page 112.

Heliamphora about ten years ago, but I believe the plants died, and although seedlings were raised they have not grown rapidly. One of them, however, flowered in 1890, and was figured in the *Botanical Magazine* (t. 7093). About a dozen newly imported pieces of the Heliamphora were sold to-day. It is known as the South American Pitcher-plant, from its resemblance to the Sarracenias, to which it is botanically related. The leaves are folded and horn-like, with an oblique mouth, scarcely any "lid," and when fully grown about a foot in length. The flowers are nodding, not unlike those of an Anemone, with scapes a foot long.

South African Fruit.—Some enterprising people interested in the cultivation of peaches and grapes at the Cape have recently made the experiment of importing the fruit into England at a time when they would be most likely to find a favorable market. The first consignment of peaches was sold by auction last Wednesday in Covent Garden, and realized about twenty-seven shillings per box, some fetching as much as two shillings each fruit. They arrived in splendid condition—so good, indeed, that they might easily have been mistaken for the choicest English-grown fruit. The grapes were a failure, owing, I believe, to faulty packing, and possibly to improper treatment during the voyage. I have seen and eaten grapes and peaches at the Cape, and can testify to their excellence both as regards size, finish and flavor. If the long voyage, partly through the tropics, can be made without injury to the grapes, there is a certain market for them in Europe. The fruit is as easily grown at the Cape as gooseberries are here. Of course, the result of this first experiment need not be taken as final. Even this badly packed consignment of grapes was described as being "large, well-shouldered in bunch, and full in berry." Sold by auction they realized about threepence per pound. The facilities afforded by the very fast steamers of the present time, fitted, too, with the most approved packing and store rooms, render the transport of delicate fruit, flowers and plants from distant countries much easier and cheaper than used to be possible. As a consequence, many islands and other places in the tropics which are favorable to the production of good marketable produce are being seized upon by enterprising people for the growth of fruit, flowers, seeds, etc., to be sold in Europe. The lot of the English growers is yearly becoming harder. All the skill in the world has no chance against the prodigality of nature in the tropics, combined with cheap labor properly guided.

Horticultural Training.—The editorial comment on what I said with regard to this question (see page 55), namely, that if in addition to practice the pupil is instructed in some of the principles of the sciences related to the art, he ought to be a more intelligent practitioner and a broader man, cannot well be controverted. As a matter of fact this is the principle which is worked upon at Kew. Applicants are expected to take an intelligent interest in the science as well as the art of horticulture; a man who has no desire to know the reason why of his art is scarcely likely ever to rise very high in his profession. But the art, i. e., the practice, is a *sine qua non* in men who are expected to grow plants well. A knowledge of the theory alone would not enable him to do this. Nobody has ever been so foolish as to decry knowledge and thoughtfulness in horticulture. The more the better. But it will be admitted that no amount of book knowledge will enable a man to grow plants well unless he has had a practical training in the art. We only ask that practice shall be placed first; that the clever grower shall get due credit for a knowledge of his art even though he may be ignorant of the scientific principles of that art, and that the best gardener shall be he who does his work best rather than he who can talk most learnedly about it.

London. *W. Watson.*

Cultural Department.

The Winter Garden.

In this latitude the month of January has been one of rather moderate temperature, with no prolonged period of excessive cold and no season of warmths such as is known as the January thaw. In consequence there has been very little movement of vegetation, and even the precocious Chickweed has not as yet shown flower in the garden. However, the garden has at no time been entirely bare of flowers. The autumnal Snowdrops still preserved their forms till early in the new year, when Elwes' Snowdrops began to show color, and stray plants of Anemone blanda greeted the lengthening days with their cheerful stars. During February these Snowdrops preserved their purity through all changes of weather, and have been gradually joined by other varieties—Galanthus plicatus, G. Fosteri and G. umbricus. Some stray blooms of Scillas make dainty spots of blue in the border, and the first of the reticulata group of Irises, I. Bakeriana, has been true to its season. A few warm days will bring forward others of the group, with some varieties of Anemone, to be followed soon by the rush of spring flowers.

It may as well be repeated that the flowers named are true winter flowers, and are as well adapted by their structure for their winter environments as any summer flower is adapted to its season. As a matter of fact, if protected from blasting northwest winds, they have an endurance beyond that of most flowers of other seasons. On the 4th of January I noticed the first Anemone blanda, which had been encouraged into growth in a warm corner by the edge of a mat overhanging a frame. That same flower, now early in March, opens up its face to the sun every bright day, as pure and unscathed as at first. The Snowdrop hides a capacity for heroic endurance under a form of the most captivating fragility and helplessness. The reticulated Irises vary somewhat, and if the buds are caught in a certain state by an extreme frost they may be injured, but when expanded they endure for a number of days. Over these flowers it is well to secure a sash or some contrivance to throw off wet, but they need no coddling from the cold. At this moment my flowers are under the snow, but the first warm day will reveal them again unsullied and as bright as ever. A succession of Snowdrops, Anemones, Scillas, Muscari, Crocuses, Chionodoxas, Irises, Fritillarias, Aconites, etc., will carry forward the season to the first Narcissi and large-flowered bulbs, which later fill the garden with gay blooms. Of course, these small flowers, even in considerable colonies, are not showy, and do not make much impression on the general bareness of the garden, but they are distinctly pleasing and always interesting, and these are qualities we should insist on in a plant as well as in a friend.

One of the pleasures in making a winter and early spring garden is the constant study and experiment required and the difficulty of securing choice material, with the harassing doubt at first as to results. Such a garden is never finished. One gains new points every season to be put on trial, and is pleased if every year shows some slight gain. At present my small bulbs are planted in clumps, with clumps of Narcissi for succession. Over all is sown a sprinkling of Poppy-seed, for the summer succession. The roots of these latter plants run deep, and should help to keep the ground sweet. It is, of course, a drawback to bulb-culture that beds must be primarily devoted to them, and it is better to suffer the sight of bare earth rather than cover with vegetation which will interfere with the ripening. A bed of this kind is not protected during the winter by any covering, plants of at all doubtful hardiness being in other quarters. Most of these plants are also capital subjects for a cold house. As suggested a few weeks since, a pan of Snowdrops, thickly planted, is very attractive, and the plants will be furnished with better foliage than in the open. Iris reticulata forces about as readily as any bulbous plant, and its pleasant Violet-like odor is very pronounced under glass. There is much difference in the beauty of the flowers of this Iris, those of a reddish cast being not attractive. If one has a cool house from which frost is just excluded, plants of the character under discussion can be grown very effectively and satisfactorily in a rockery, on which can also be arranged some of the small alpines which suffer out-of-doors from the winter rains.

Elizabeth, N. J. *J. N. Gerard.*

Variegated Abutilon Eclipse.

This must not be confused with another Abutilon named Eclipse, a large variety with green leaves and flowers, orange-colored, veined with crimson and purple. The latter plant is a standard variety in England, though not common in this country. The variegated one is very distinct and beautiful, resembling A. vexillarium in type, being of trailing habit and most useful as a pillar-plant for the greenhouse and conservatory. Trained loosely, so as to allow the side branches to droop, it is very effective, as it bloom in the winter, when its graceful branches are loaded with lovely bell-shaped flowers of orange-yellow, with sepals of reddish brown. The leaves are mottled with bright yellow and deep green, and the variegation is most distinct in the winter months when the sun is not so strong, and this makes it more useful.

One of the best modes of culture is to grow it as a standard, using any of the ordinary varieties for stocks, and budding or grafting at the desired height. The stock requires to be grown to a single stem, and kept tied to a straight stick until strong enough to support itself. Two and a half or three feet is tall enough, when the top should be pinched off so as to afford

stiffer and harder growth for budding. This is better done in the spring in a greenhouse, where the plant can be kept in a moderate temperature and partially shaded. If no currents of dry air are admitted—that is, if the house is not too freely ventilated—the buds will "take" in about two weeks. When union is effected, the growth of the stock should be restricted, pinched and kept back, to throw strength into the new growth of the buds, but it should not be stripped of leaves until the buds have made considerable growth, so that the roots are kept active and no check is given the plant. Such plants will make good specimens for the next winter. Eclipse is of better habit than A. vexillarium and forms a bushy top. If any shoots are straggling pinch them back, and they will break and become more bushy. The plants may be kept in pots or planted out during the summer and potted in the fall. During the winter months they will produce profusely axillary flowers in clusters to the tips of the branches and make a striking display. The plant is also an excellent one for bedding out, and it makes a good edging to groups of large plants. For baskets or vases it cannot be surpassed. Cuttings of the young wood strike readily at any season. The ordinary soil for greenhouse-plants will answer well for this Abutilon. When the pots are full of roots an occasional watering with liquid-manure will prove beneficial.

Dongan Hills, N. Y. *Wm. Tricker.*

Cypripedium Leeanum and Varieties.

OF the many fine hybrids which have been obtained artificially by fertilizing one species of Cypripedium with the pollen of another the subject of this note is one of the best and most generally useful. There is hardly a flower-show throughout the year, at which it is customary to exhibit Orchids, where C. Leeanum is not represented by numerous varieties. This is sufficient evidence of the free-blooming quality of this plant, and the flowers when cut will keep a fortnight.

Like many other fine hybrids, C. Leeanum was produced in the nurseries of Messrs. Veitch, of Chelsea, the parents being C. insigne and C. Spicerianum. The flowers first expanded in January, 1854, and were exhibited at the Royal Horticultural Society in the same month. A glance at the flowers suffices to show that both parents are represented in their offspring, which for size and beauty of color surpasses both. The upper sepal, which possesses the peculiar fan-shaped overhanging properties of C. Spicerianum, is almost entirely pure white, with the exception of a bright green blotch at the base, from which radiate upward and outward rows of mauve-purple spots. The lower sepal is much smaller, but still of a fair size, and is pale green with two rows of dark red spots running more than half-way down the inner surface. The petals partake of the characters of those of C. insigne and C. Spicerianum, the upper margin being for half its distance wavy. The surface is greenish yellow with a conspicuous purple-brown line down the centre, while there are numerous dark spots at the base. The lip is a deep glossy purple-brown, exhibiting a reddish tinge here and there, according as the light strikes it. The incurved lobes, however, are a pale buff-yellow, as is also the large crinkled staminode, in the midst of which is a lemon-colored knob surrounded by numerous minute warts, the tips of which sparkle in the light.

Of the numerous varieties the most worthy of notice are Superbum, Giganteum and Masereelianum. The first is tolerably well known by its large upper sepal and distinct blotches; the second is a still larger form, with the same characteristics, while the third—Masereelianum—is the most distinct of all, and may at once be recognized by the conspicuous ivy-green blotch at the base of the upper sepal, which is decorated in the same way, only with larger spots, as the variety Superbum.

The same treatment accorded to C. Spicerianum will suit C. Leeanum.

Isleworth, London. *John Weathers.*

Insects in the Soil of Greenhouses.

DURING the present winter much complaint has been made that the soil in many greenhouses is so completely infested by insects that plants fail. This not only in private conservatories, but among gardeners who raise flowers for market and in the forcing-houses of truckers. From a considerable number of samples of soil seen, I find that the insects are nearly always either podurids, maggots or fly larvæ, or myriapods. The podurids are minute insects, usually brown in color, furnished with a pair of anal styles, by means of which they leap about quite actively. They sometimes occur in the soil in perfectly astounding numbers. In one case, where on a warm sunny day the house was opened, they crowded the surface one-quarter of an inch thick, and about two ounces of specimens were brought me. As the specimens are less than one-sixteenth of an inch in length, and of no perceptible diameter, the number can be only guessed at by millions. These insects feed on decaying vegetable matter in moist, warm places. They are lowly organized, and of a scavenger character. The fly larva was that of a muscid, not one of the root-maggots, and was always associated with rotting manure. The myriapods, finally, were either cylindrical forms like Iulus, or somewhat flattened forms like Polydesmus, and in all cases lovers of warm moist places, and, normally, feeders on decaying vegetation. These creatures were usually described as wire-worms, while the podurids figured as lice, and much of the failure of plants was charged to them. The podurids and fly larvæ were innocent; but there is good evidence that the myriapods did some gnawing of Rose-roots, and perhaps of those of other plants as well. It will be noted that all of these insects are, primarily, feeders on decaying matter, and this decay is provided in any quantity by the manure used to enrich the soil. This abundant nourishment, combined with an equable warm temperature and a moist atmosphere promoting decay, furnishes ideal surroundings for these insects, and they multiply accordingly. When the soil becomes filled, every injured root and every dying rootlet becomes a point of attack, and they promote decay by keeping bare and irritated every point of injury. The remedy is simple. Apply some of the needed nitrogen in the form of nitrate of soda, and some of the needed potash in the form of kainit. Put the kainit into the ground before you set out your plants, and your nitrate when you want the plants to do best. Both these substances are soluble in water, and can be put into pots in solution. None of the insects mentioned can live in a soil impregnated by these minerals, while as fertilizers they are worth all they cost. In other words, reduce the amount of decaying matter in the soil, and add the needed elements in some directions by using the minerals themselves. It is the salt in its combination in the nitrate and kainit that has the insecticide effect; but common salt is not as effective in the form in which the chloride is combined as it is in the kainit.

Rutgers College. *John B. Smith.*

Sowing Celery-seed.

MANY amateur gardeners have so much difficulty in getting a good germination of Celery-seed that they have abandoned the effort and buy their plants.

This may be the best course when only a few plants are wanted, but it is easy to get the plants from seed with proper treatment. My plan, which has never failed, even in hot-weather sowing, which is essential here, where early sown plants would run to seed in fall, is as follows: Celery-seed, being quite small and their first growth delicate, will not bear heavy covering of earth, and a light cover in our brilliant sunshine soon becomes so dry that germination is retarded; I therefore sow on a well-prepared border on the north side of a board-fence. The rows are barely traced across the bed, and the seed scattered thinly on the lines. The whole bed is then beaten over with the back of the spade, which gives sufficient cover. I then cover the surface with old gummy sacks or cotton baling. This prevents the drying of the surface and insures a uniform germination. As soon as the seeds sprout the cover is raised on sticks and gradually removed as they show green leaves and can bear exposure to the light.

As soon as the plants are large enough to handle easily I transplant them to a cold frame and cover the frame, in lieu of sashes, with screens made of laths tacked an inch apart. This gives a varying shade, and the plants thrive wonderfully and will need to have their tops sheared once or twice before final transplanting.

The time for sowing the main, or winter, crop would be late in March in latitude of New York, and in late May in North Carolina, and the final transplanting in July and September respectively.

Raleigh, N. C. *W. F. Massey.*

Aster acris.—This is one of the most useful of the dwarfer forms of perennial Aster, or Michaelmas Daisy. It is a delightful plant to produce a gay mass of color, and should be used freely to color the garden-scenery in the fall months. The habit of the plant is quite dwarf, and even in rich soil the growth does not rise more than two and a half feet, the leafage in the autumn, from the middle of September until early October, being hidden beneath the mass of light purple flowers. I have seen this variety produce beautiful pictures in the

autumn, and associates well with the early-blooming section of Chrysanthemums best represented by the variety Madame Desgranges, the Daisy forming the outer ring to the bed, the centre filled up with the Chrysanthemum. Both grow freely in ordinary soil.

Kew. *V. C.*

Correspondence.

Constitutional Health of Plants.

To the Editor of Garden and Forest:

Sir,—Observing the growths of the various plants we notice that some of them are unthrifty, and when closely inspected we find them infested by microscopic parasites. Other plants we see preyed upon by insects, which, like the fungi, eat the substance of the plant. We may also notice other plants, growing under apparently similar conditions, but free from fungus or insect, and apparently healthy in the midst of pestilential influences.

Fungi and insects evidently choose their food, and where there is a choice of adaptable foods they often show a decided preference. The potato-beetle feeds upon the Egg-plant, the Tomato-plant and the Potato-plant, but, where all of these are equally accessible, the Potato-plant will be chosen the first. The rose-bug feeds upon all sorts of Grape-vines, but it prefers those containing the blood of Vitis riparia, and where it finds some of these vines in the vineyard it will feed chiefly upon them, nor eat of other vines until these are devoured. Hence viticulturists advise the interspersing of a few Riparia-vines in the vineyard to attract this insect from other varieties.

Just as higher plants refuse to grow in some soils and thrive in others, fungi show their preferences for one or another host-plant. The black rot of the Grape infests almost all varieties of the vine, yet among them the omnipresent spores of this parasite manifest this elective affinity in a remarkable way. For example, in ordinary seasons favorable to thrift of the vine and unfavorable to activity of this fungus, the Ives are comparatively exempt from attacks of this so-called disease. Yet vineyards of the Ives are sometimes ravaged by the black rot, proving that this variety of Vitis Labrusca is not specifically resistant to the fungus. But in the behavior of the fungus with relation to this vine we have interesting proof of the action of those subtle preferences, already alluded to as elective affinities. In 1873, when the grape rot first became severely epidemic in southern New Jersey, I noticed in one of my vineyards a few Ives Grape-vines free from the disease, while surrounding Concords were all rotting. Soon afterward, in a report from the state of Illinois, I was informed that "the Ives grape does not rot." I then procured Ives vines, and in a small vineyard of five hundred Concords, set twelve feet apart along the rows, I planted Ives vines intermediately with the Concords, purposing, if the latter proved unsatisfactory, finally to extirpate them. At the same time I planted another vineyard of two thousand Ives vines. All of these vines, Ives and Concord, came in fruit together. Grape rot was epidemic, and destructive to the Concord. In the vineyard of mixed Ives and Concord the latter all rotted, while the Ives grapes did not rot at all. The vines of both sorts interlaced on the trellis, and here were clusters of Concord totally ruined by rot, while among them, and almost touching them, were clusters of Ives completely healthy. In this mixed vineyard this phenomenon of diseased Concords and healthy Ives has been yearly manifest.

On the other hand, in the vineyard where two thousand Ives are planted by themselves, there is yearly more or less of grape rot, appearing sporadically, but never so badly as on Concord-vines. When this Ives vineyard was planted, a few vines failed to grow; these were replaced by Concords. When the latter came in fruit the rot took full possession of them, while the Ives growing nearest to the rotting Concords were the healthiest of any of the Ives-vines in the vineyard. It looked almost as if the germs of the rot fungus were endowed with the power of motion, and had abandoned the Ives vines to feed upon the Concords.

Certainly each minute organism has its own peculiar way of propagating its species, and in getting a living makes choice of congenial foods. Now, since this choice of food is directed by some peculiar quality in the juices or tissue of the plant which are attractive to these devourers, or else repellant to them, it may be possible by an enlightened use of special fertilization, or by medication, to influence or modify the qualities of cultivated plants, so as to render them unattractive to these aggressors. Why is it impossible for science to discover prophylactics for the diseases of plants as it has done for contagious diseases of animals? Such prophylactics might be administered through the natural channels of absorption with plant-food. Or if the subtle germ or virus productive of disease can be transmitted from plant to plant by inoculation, as in the case of Peach yellow, perhaps the antidotes (when we discover them) may be also thus applied.

Experience shows that plants stimulated into vigorous growth by special fertilizers are often peculiarly exempt from the attacks of insects and of fungi. Evidently, there is that in the juices of such plants which does not please their taste. I planted some Potatoes on poor soil, where they made but feeble growth. Near this plat was one planted with similar Potatoes, fully fertilized, and stimulated by nitrogenous manures. The weak plants on the poor soil were attacked by the beetle and devoured before the strong plants were touched. This is ordinarily explained by saying that the fertilized plant grows faster than the bug can eat it; but, in fact, the beetles did not visit these plants. When they had consumed the plat of weaker plants they sought other fields of similarly starved Potatoes and ate these in preference.

These two Potato-plats also showed a remarkable contrast in resistance to the Potato-blight, which, when it became epidemic, attacked the weaker ones first and totally killed them. The stronger plants were blighted later, but the leaves only were harmed. The stalks were unaffected, and, after the foliage perished under the fungus, they put forth a new growth, which endured until frost, maturing a crop of tubers. Evidently, fertilization promotes the health of the Potato-plant, and enables it to resist some diseases. There is reason to hope that when we shall have learned how to feed the plant with all of the requisites to health, we may secure more complete exemption from contagious disease.

Vineland, N. J. *A. W. Pearson.*

The Tan Bark Oak.

To the Editor of Garden and Forest:

Sir,—Among Californian Oaks, and there are many, none are more beautiful than Quercus densiflora. It is an evergreen, and forms in appearance a connecting link between the Oak and the Chestnut. The leaves, elliptical in outline, light green above and fuzzy beneath, are shed in summer. In July it blossoms, and the very fœtid odor of the flowers is the one disagreeable trait of this fine tree. It bears a true acorn, oblong in shape, set in a shallow cup, which, on account of long, slender light green scales, seems moss-covered. The bark is thick and rough, exceedingly rich in tannin. The wood is straight-grained and tough, excellent for fuel, and will, in all probability, be found valuable to the wood-worker. It ranges from Monterey County north to Mount Shasta, in the Coast-range of California, being pretty closely confined to the Redwood belt. At Mount Shasta it grows as a bush five to eight feet high, covering considerable areas.

It is in the Redwood region that it attains its greatest perfection, and it is everywhere a tree of the mountains. On the open ridges the Tan Bark Oak is a great spreading tree, frequently three feet in diameter and fifty in height.

The dense shade of the Redwood forest forces every tree to grow up for light and air, and in such situations this Oak grows as erect as a Pine, almost bare of branches for two-thirds its height, seldom over two feet in diameter and frequently sixty to eighty in height.

It is on the eastern or interior edge of the Redwood belt that it is most abundant, forming the principal growth on the ridges, and preponderating on the upper slopes. Its commercial value is great, and the demand so much that it is now being hauled by wagon twenty to thirty miles over rough mountain-roads to reach the railroads or sea-coast, and large areas are stripped annually. Nearly all of these mountain-roads follow the ridges, enabling the bark-peelers to secure the bark readily along not only the main ridges, but the laterals.

The workers, with their families, move out into the woods for the summer. A Redwood is cut, and the lumber split out for the cabins, sheds, stables, and even the board chimneys. A few lengths of one of these big trees will split into enough lumber to build quite a settlement. The Oaks are cut close to the ground, and the bark scored off into four-foot lengths. It is then peeled and thrown down to dry. When dry it rolls. The hill-sides are very steep, and to get this bark to the wood-roads hand-sleds are used. In some places where wood-roads would be expensive, pack-mules have been used.

Nothing but the bark is used, and after the peelers have gone through a maze of trunk and branch covers the ground, to rot or be burned by the next forest-fire. Of course, the wood is used for fuel in some few places accessible to shipping-points, but it may be said safely that not one-tenth is so

used. When a fire sweeps through this mass of dry material it burns with a heat that kills small standing trees. In peeling the methods are wasteful, and very often a tree may be seen that some lazy peeler has girdled by taking a four-foot section of bark from the base. The Tan Bark Oak is tenacious of life, and sprouts vigorously, but the odds are against it, and it seems as if in a few years this fine growth, whose future value, on even a cord-wood basis, would be immense, will be destroyed to secure a few lengths of bark from each tree.

Ukiah, Cal. *Carl Purdy.*

Help Against the Gypsy Moth.

To the Editor of GARDEN AND FOREST:

Sir,—In view of the success which has apparently crowned the efforts of the Orange culturists of California in "fighting fire with fire," or rather insect with insect, and, calling to mind the warfare which is being waged in the vicinity of Boston with the Gypsy Moth, I was struck with a passage I was reading to-day in a little book entitled *The Branch Builders*, by the late Rev. J. G. Wood, which, if my memory is not at fault, is a reprint of a portion of his better-known work, *Homes without Hands*, and which may perhaps suggest a new method of meeting the invader.

In treating of the habits of an English species akin to our tent-caterpillar, he speaks of a carnivorous beetle, the larvæ of which are often found in the nests of this pest, and which feeds voraciously on the caterpillar. The scientific name of this beetle he gives as Calosoma sycophanta.

The following extract will show its connection with the case in hand:

"Knowing the habits of this grub, a French entomologist, Monsieur Boisgerard, managed very ingeniously to avail himself of its devouring capacities. There is a well-known insect, the Gypsy Moth, which is very common in France. The larvæ of this moth are destructive to trees, feeding on their leaves, and then retreating to a hiding-place in some crevice of the bark. Finding his trees infested with these caterpillars, Monsieur Boisgerard procured a number of female Calosomas, and placed them on the trees. They laid their eggs, and in due season the larvæ were hatched. In process of time the destructive grubs increased so much that they ate all the noxious caterpillars, and at the end of the third year the trees were cleared, and the Calasoma beetles had to go elsewhere for a living."

"In England the Calasoma is very rare," but "in the south of France it is plentiful enough, as is needed from the enormous multitudes of crop-destroying caterpillars on which it feeds."

This plan may already have been tried or investigated, but if not, it seems to me worthy of consideration, though I am aware that the introduction of foreign species of animals is not to be lightly entered into; witness, the English sparrow and the rabbits of Australia.

Minneapolis, Minn. *Frank H. Nutter.*

[There is no doubt that certain ground-beetle larvæ feed upon hairy caterpillars, and the observation mentioned is correct. Professor Riley writes that he has for some time been urging the Gypsy Moth Commission to send an agent abroad to collect the European enemies of that insect, and it is to be hoped that this will soon be done.—ED.]

Exhibitions.

Orchids at Short Hills, New Jersey.

THE exhibition at the United States Nurseries, to which Messrs. Pitcher & Manda invited the public last week, surpassed in richness of material and effectiveness of arrangement any of the previous efforts of the firm. The main display was arranged in the great Palm-house, 250 feet long and high enough to accommodate superb specimens of Tree Ferns and Palms. The visitor entered the house through a vestibule flanked by tall Laurels and Cytisus in bloom, with the clear golden yellow of Doronicums on either side of the doorway. Inside the door there seemed to stretch away to an interminable distance a tropical forest, with its shady vistas brightened by the flowers of thousands of Orchids, not crowded together, but naturally and effectively placed where their soft harmonies and contrasts would make the most pleasing picture. On either side of this long house, and opening into it at right angles, were other houses, making altogether a cluster of twenty, each one of which was a study. One of them, for example, was entirely filled with Areca lutescens; a second with Adiantums; a third with Pandanus, and a fourth with Phœnix. Dracænas filled another, and Areca Baueri another still; and one which contained nothing but Anthuriums and Bromeliads faced another filled with Kentias and Cocos.

It would be useless to attempt a description of all the rare and beautiful Orchids that were scattered among the greenery of the great house. To name them even would be a task, as the list would include most of the principal species and varieties in flower at this season which are prized in the great collections of the world. There were some 3,000 plants in bloom. But among those which were particularly attractive we noted a vigorous specimen of the white Cœlogyne cristata. Near it was the dainty little Epidendrum Endresi, and farther on were the long white and fragrant spikes of Dendrochilum glumaceum. On a stage about a huge Chamærops were grouped fifteen specimens of the white Lycaste Skinneri, and fifty of these snowy flowers are not often seen together. Among the Dendrobiums was a strong plant of D. splendidissimum grandiflorum, and suspended from one of the Palms was as fine a piece of Angræcum sesquipedale as we have ever seen, with its deep waxy cream-colored blossoms. Among the most interesting of the different varieties of Cattleya Trianæ was Lee's variety, not only rare, but wonderful for the depth and richness of its color. C. speciosissima was represented by a variety remarkable for its size and for the delicacy of its pale lilac blossoms. An interesting place to linger was among the many distinct varieties of Odontoglossum crispum, and near these was a plant of O. Rukerianum with two large spikes and fifty flowers.

One of the houses opening into the Palm-house was full of Cypripediums, which occupied both the centre stage and side benches, with no plants among them except small Araucarias and one row of tall ones in the centre to soften the color. There were one hundred and twenty-six varieties here in bloom, and more than five hundred plants. They were all seen to good advantage, as the plants were separated by the soft green foliage of the Araucarias. Perhaps the experts in Cypripediums would find the greatest delight in such specimens as one of Cypripedium Sallieri Heyanum, which was offered at $800, or another of C. pavoninum, or a third of C. Germinyanum. But besides such varieties were beautiful specimens of C. villosum and other standard species in almost infinite variety. Among the new hybrids in bloom was one named Beatrice, a cross between C. Boxalii and C. Lowii, and another between C. venustum and a form of C. insigne. C. Lindleyanum was represented by an admirable plant with a spike more than three feet long.

Of course, the Orchids were the chief attraction, but the house which was filled with Azaleas, Cytisus and bulbous plants in bloom was exceedingly bright in color, and the single block of houses massed on this part of the grounds had plants enough to keep one occupied a day if he gave them more than a cursory examination. After all, the most interesting exhibition at Short Hills is the order and cleanliness and good taste shown throughout all of the fifty houses now in operation. The great stretches of plants in every stage of growth, from the tender seedling up to the display specimens, all show good health and careful cultivation, while all the operations and processes of the immense establishment move on with apparent smoothness and ease. Of Orchids alone there are said to be here some 1,200 distinct species and botanical varieties, at least 400 horticultural varieties, and perhaps as many artificial hybrids. There are 3,000 seedlings growing, some of them hybrids between different genera.

Orchids at the Eden Musée.

FOR the sixth year in succession Messrs. Siebrecht & Wadley have held an exhibition of Orchids and other tropical plants at the Eden Musée, in this city. The chief interest of the exhibition, as usual, centred in the Orchids, which were shown in considerable variety, but first-rate specimens of Palms, Cycads, Tree Ferns and other rare and valuable tropical plants were also displayed. Many of these last were said to have been lately brought from Trinidad, where there is a branch of the Rose Hill Nurseries, in which tropical plants are produced in large quantities. The plants were arranged with good taste, especially the curtain of greenery which masked the front of the balcony. One of the most interesting Orchids in Messrs. Siebrecht & Wadley's collection was a new form of Cattleya labiata which had a larger lip, a deeper color, and was altogether of thicker texture than the original type. There were good plants of Cattleya splendidissima, C. Schrœderæ and C. Aspasia, and many other choice forms of C.

Trianæ. Cymbidium Lowii was represented by some well-grown specimens.

Mr. W. S. Kimball, of Rochester, had a remarkable group of Cypripediums, among them being fine examples of C. Argus, C. Boxallii atratum, C. Calurum, C. Winnianum, and fifty others. The new variety, C. Lathamianum, was seen for the first time by a good many visitors. Mr. F. H. Goodrich also showed some admirable specimen plants, one of Odontoglossum grande attracting the most attention. The collection of Mr. Hicks Arnold was represented by a magnificent spike of Dendrobium Phalænopsis Schrœderianum, blooms of Cypripedium microchilum, C. Lathamianum, and many other choice species. Mention should also be made of a wonderful specimen of the true Cattleya Trianæ alba, the genuine snow-white form, which is so rarely seen. Apart from the Orchids, two magnificent plants of Licuala grandis and some admirable Crotons were the most attractive things in the exhibition.

Since the last exhibition some changes have been made in the hall, and they do not seem to have improved it as a place for displaying plants and flowers to the best advantage. It was a misfortune, too, that the proprietors of the Eden Musée were unable or unwilling to furnish a better light in the evening. When the owners of fine plants go to the trouble and expense of transporting them a long distance, besides sending competent persons to superintend their arrangement, it is worse than annoying to have their beauty hidden in darkness.

Notes.

Mr. John N. May writes to the *American Florist* that throughout the entire eastern section of the country there is complaint that Roses are not producing as well as usual this year.

The third southern California Citrus Fair, now open in Los Angeles, is said to surpass all its predecessors in variety and beauty of exhibits. Tourists who may be passing through Los Angeles are advised by a correspondent of *The Tribune* to see this fair, as it demonstrates the important work being done for the improvement of oranges and lemons. One of the features of the display is the new seedless lemon, which promises to rival in popularity the navel orange.

Number 2,000 of the *Gardeners' Magazine*, its issue for February 27th, has just been received. This journal was started on the 1st of March, 1833, as a sixpenny monthly, under the name of the *Floricultural Cabinet*, by Mr. Joseph Harrison. His sons carried on the paper until 1859, when it was changed to a weekly under its present title. In 1861 Mr. Shirley Hibberd became its editor, and continued to occupy that post until his death, in November, 1890. Mr. Hibberd was succeeded by Mr. George Gordon, who was associated with him in the literary management of the paper for many years. A horticultural journal, with an honorable history of nearly sixty years behind it, is worthy of respect, and deserves the best wishes of all lovers of the art which it represents.

The bill to incorporate the Yellowstone Park Company, to which editorial allusion was made in last week's issue, was referred to Secretary Noble for his opinion, and he has sent to the chairman of the committee which holds the bill an energetic protest against it. After criticising it in detail, he characterizes it as opposed to the public good, for private interests solely, and in every way pernicious. He expresses the opinion that, in view of the growing interest in the park, the Government should strengthen its control over it rather than substitute a corporation in its place and compel the people to feel at every stage of progress amid these wonders that they are there to help a private enterprise rather than to enjoy their own under the control and responsibility of the National Government.

On the German seed-farms labor is very cheap. The average wages of a workingman is from seven to nine shillings a week, and for this he works from five in the morning to seven in the evening, and in winter one hour less, commencing at six instead of five. In summer the hands are employed in the seed-grounds, and during the winter months in the warehouses cleaning and dressing seeds. Much of the lighter field work, such as hoeing, cleaning and gathering seed, is done by women and girls, who work in gangs under the charge of a foreman. They are very expert in the use of the hoe, and get over nearly as much ground as a man. They earn from tenpence to one shilling per day, and many have to walk several miles to and from work, as the majority live in the surrounding villages.

Mr. J. M. Samuels, Chief of the Department of Horticulture for the Columbian Fair, writes to the press that P. S. Peterson, a nurseryman of Rose Hill, Chicago, has during the past week planted six trees on the grounds near the horticultural building, as a permanent exhibit, and as a practical illustration of the successful methods of transplanting large ornamental trees. They are an Elm, fifty feet high and two feet in diameter, brought from the woods in 1876, when fifty years old, and planted on the nursery grounds at Rose Hill; a Hackberry, forty feet high and two feet in diameter, also transplanted from the woods in 1876; a Linden, forty feet high and a trunk eighteen inches through; a Willow, thirty feet high and thirty feet spread; a Sugar Maple, forty feet high; an Ash, thirty-five feet high. It required a force of twenty-two men and twelve horses to transplant the trees, and the cost of the work was about $700.

Surprise is expressed in *Meehans' Monthly* that the English Heath is not more generally cultivated in the United States. It has been in prominent American nursery catalogues for many years, but the demand for it is small, because people do not know that it may be cultivated readily. The great enemy to it is the sun when the thermometer is very low. It would grow near the North Pole, with a light covering of leaves, snow or anything that would protect it from the sun. It will not grow in heavy clay or in any soil where the earth packs closely together, as the small hair-like roots cannot penetrate this stiff matrix; but wherever the soil is sandy, gravelly, or in any way so constituted that the little roots can push freely, it grows well. It is a good plan to enclose a plant in a four-sided frame, such as a soap-box without a bottom, and fill in three to four inches of sand so that it gets in among the lower branches. The plant seems to thrive even better under such circumstances than on its native heaths.

"There are certain flowers," says Mr. Conder in his book on Japanese flowers, "which bloom twice in the same year. These are technically called Returning Flowers. Though considered unsuitable for ordinary occasions, because out of harmony with the season, such flowers are especially appropriate for farewell gatherings. The idea in so employing them is to express the hope for a safe return. . . . Flowers placed before sick persons should be put together in a rapid and unlabored manner, and should be vigorous in style, to suggest the idea of recovery and strength. At the ceremony of praying for the sick flower-compositions should be full and gay, as well as bold and powerful in style. . . . As it is the east wind which brings rain, floral arrangements used at time of praying for rain should have their principal line pointing from right to left, to suggest the east wind blowing; a reverse arrangement is resorted to on occasions of prayer for fine weather, when the principal line, leaning from left to right, is made to suggest the west wind.

Among the investigations of timber undertaken by the Department of Agriculture was a series of tests to determine the effect of gathering resin from Long-leaf Pine upon the strength of the timber. It has been believed that timber from trees which have been "boxed," sometimes known as "Turpentine timber," loses both durability and strength. There can be little doubt that the withdrawal of the resin, which keeps out water, and has apparently some antiseptic qualities, does reduce the capacity of the timber to withstand rot. But the tests so far carried on seem to indicate that turpentine timber possesses greater strength than that from unboxed trees. Of course, this result is not to be accepted without further verification, but the matter has seemed to Mr. Fernow of sufficient importance to justify a circular giving the conclusions of Professor J. B. Johnson, who is conducting the experiments at St. Louis. In a general way these conclusions are that turpentine timber exhibits less tensile and shearing strength, but it is stiffer and has greater compressive strength endwise and greater cross-breaking strength. The turpentine timber proved harder to work, however, since the resin seemed to be collected in spots, and gummed up the tools.

Catalogues Received.

Bulb Growers' Association, Bayonne, N. J.; Price-list of Summer-flowering bulbs and Seeds.—Chipman Brothers, Sandwich, Cape Cod, Mass.; The Cape Cod Pond Lily.—M. Crawford, Cuyahoga Falls, O.; New Strawberries.—Emerson, Smith & Co., Beaver Falls, Pa.; Saws.—Fred. W. Kelsey, 145 Broadway, New York; Choice Hardy Trees and Plants.—E. W. Reid, Bridgeport, O.; "Everything for the Fruit Grower," Price-list of Select and Tested Seeds.—J. C. Vaughan, Chicago, Ill.; Trade-list for Florists.—Jas. E. Warner, 19 Park Place, New York; The Thermostatic Incubator.—H. W. Williams & Sons, Batavia, Ill.; Tree and Plant Labels, Transplanting Boxes and other Supplies for Nurserymen and Florists.